

1 WHAT IS CLAIMED IS:

1 1. A method of processing data packets comprising:
2 determining an actual arrival rate of data packets and a
3 number of data packets stored in a queue; and
4 initiating transmission of data packets in the queue
5 based on the actual arrival rate and the number of data
6 packets in the queue.

1 2. The method of claim 1 including receiving the data
2 packets from a program; and transmitting the data packets to a
3 device.

1 3. The method of claim 1 including receiving the data
2 packets from a device; and transmitting the data packets to a
3 program.

1 4. The method of claim 1 wherein transmitting the data
2 packets in the queue includes transmitting at least one burst
3 of data packets, wherein each burst contains a number of data
4 packets sufficient to maximize throughput.

1 5. The method of claim 1 further including storing a data
2 packet in the queue if the actual arrival rate is less than
3 the first threshold value, and scheduling a future interrupt
4 event to cause processing of data packets from the queue.

1 6. The method of claim 1 further including comparing the
2 actual arrival rate of data packets to a first threshold.

1 7. The method of claim 6 further including transmitting a
2 data packet without storing the data packet in the queue, if
3 the actual arrival rate is greater than the first threshold
4 value.

1 8. The method of claim 6 wherein the actual arrival rate is
2 based on a weighted average of time intervals between a
3 predetermined number of previous data packets and the first
4 threshold value corresponds to a predetermined arrival rate.

1 9. The method of claim 1 further including comparing the
2 number of data packets to a second threshold.

1 10. The method of claim 9 wherein the second threshold value
2 represents a number of unprocessed data packets.

1 11. An article comprising a computer-readable medium that
2 stores computer-executable instructions for causing a computer
3 system to:

4 determine an actual arrival rate of data packets and a
5 number of data packets stored in a queue; and
6 initiate transmission of data packets in the queue based
7 on the actual arrival rate and the number of data packets in
8 the queue.

1 12. The article of claim 11 including receiving the data
2 packets from a program; and transmitting the data packets to a
3 device.

1 13. The article of claim 11 including receiving the data
2 packets from a device; and transmitting the data packets to a
3 program.

1 14. The article of claim 11 wherein transmitting the data
2 packets in the queue includes transmitting at least one burst
3 of data packets, where each burst contains a number of data
4 packets sufficient to maximize throughput.

1 15. The article of claim 11 further including instructions to
2 store a data packet in the queue if the actual arrival rate is
3 less than the first threshold value, and scheduling a future
4 interrupt event to cause processing of data packets from the
5 queue.

1 16. The article of claim 11 further including instructions to
2 compare the actual arrival rate of data packets to a first
3 threshold, wherein the actual arrival rate is based on a
4 weighted average of time intervals between a predetermined
5 number of previous data packets, and wherein the first
6 threshold value corresponds to a predetermined arrival rate.

1 17. The article of claim 16 further including instructions to
2 transmit a data packet without storing the data packet in the
3 queue, if the actual arrival rate is greater than the first
4 threshold value.

1 18. The article of claim 11 further including instructions to
2 compare the number of data packets to a second threshold,

3 wherein the second threshold value represents a number of
4 unprocessed data packets.

1 19. A data packet processing device comprising:
2 a source of data packets;
3 a destination of data packets; and
4 a data packet processing engine, configured to determine
5 an actual arrival rate of data packets and a number of data
6 packets stored in a queue and initiate transmission of data
7 packets in the queue based on the actual arrival rate and the
8 number of data packets in the queue.

1 20. The device of claim 19 wherein the processing engine is
2 configured to transmit the data packets in the queue includes
3 transmitting at least one burst of data packets, where each
4 burst contains a number of data packets sufficient to maximize
5 throughput.

1 21. The device of claim 19 further including storing a data
2 packet in the queue if the actual arrival rate is less than
3 the first threshold value, and scheduling a future interrupt
4 event to cause processing of data packets from the queue.

1 22. The device of claim 19 further including comparing the
2 actual arrival rate of data packets to a first threshold,
3 wherein the actual arrival rate is based on a weighted average
4 of time intervals between a predetermined number of previous
5 data packets, and wherein the first threshold value
6 corresponds to a predetermined arrival rate.

1 23. The device of claim 22 further including transmitting a
2 data packet without storing the data packet in the queue, if
3 the actual arrival rate is greater than the first threshold
4 value.

1 24. The device of claim 19 further including comparing the
2 number of data packets to a second threshold, wherein the
3 second threshold value represents a number of unprocessed data
4 packets.

1 25. A computer network system comprising:

2 an input device for receiving data packets from the
3 network;

4 an output device for transmitting data packets to the
5 network;

6 wherein each device includes a data packet processing
7 engine configured to determine an actual arrival rate of data
8 packets and a number of data packets stored in a queue and
9 initiate transmission of data packets in the queue based on
10 the actual arrival rate and the number of data packets in the
11 queue.

1 26. The system of claim 25 wherein transmitting the data
2 packets in the queue includes transmitting at least one burst
3 of data packets, where each burst contains a plurality of data
4 packets sufficient to maximize throughput.

1 27. The system of claim 25 further including storing a data
2 packet in the queue if the actual arrival rate is less than
3 the first threshold value, and scheduling a future interrupt
4 event, wherein the occurrence of the future interrupt event
5 causes processing of data packets from the queue.

1 28. The system of claim 25 further including comparing the
2 actual arrival rate of data packets to a first threshold,
3 wherein the actual arrival rate is based on a weighted average
4 of time intervals between a predetermined number of previous
5 data packets, and wherein the first threshold value
6 corresponds to a predetermined arrival rate

1 29. The system of claim 28 further including transmitting a
2 data packet without storing the data packet in the queue, if
3 the actual arrival rate is greater than the first threshold
4 value.

1 30. The system of claim 25 further including comparing the
2 number of data packets to a second threshold, wherein the
3 second threshold value represents a number of unprocessed data
4 packets.